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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/029,456

12/21/2001

Douglas G. Ivey

RR-496

5482

20427

7590

05/05/2003

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EXAMINER

ZIMMERMAN, JOHN J

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 05/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,456

Applicant(s)

IVEY ET AL.

Examiner

John J. Zimmerman

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) 1-68 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 69-79 is/are rejected.
- 7) ☒ Claim(s) 80 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

## FIRST OFFICE ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group II (article claims 69-80) in Paper No. 8 (received April 17, 2003) is acknowledged. The traversal is on the ground that the groups are so interrelated that a complete search and examination of the elected claims would also appear to require a search and consideration of the claims of Group I. This is not found persuasive because the search for the article claims does not require a search for the method claims. The examiner notes that the article claims do not require any electrodeposition details and therefore no search for electrodeposition details is required for a complete search of the article claims of Group II. The requirement is still deemed proper and is therefore made FINAL.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 69-79 are rejected under 35 U.S.C. 102(b) as being anticipated by Ivey (CA 2,268,867).

4. Ivey (CA 2,268,867) discloses a layered composite material comprising a layer of a first alloy species of an alloy, having first alloy species properties, and a layer of a second alloy species of the alloy, having second alloy species properties (e.g. see Figure 14 and page 22, lines 4-30). According to Ivey, the BSE images show distinct layers comprising different phases of gold-tin compositions.
5. Claims 69-79 are rejected under 35 U.S.C. 102(a) as being anticipated by Ivey (U.S. Patent 6,245,208).
6. Ivey (U.S. Patent 6,245,208 to a different inventive entity than the pending application) discloses a layered composite material comprising a layer of a first alloy species of an alloy, having first alloy species properties, and a layer of a second alloy species of the alloy, having second alloy species properties (e.g. see Figure 14 and column 16, lines 1-59). According to Ivey, the BSE images show distinct layers comprising different phases of gold-tin compositions.
7. Claims 69-74 are rejected under 35 U.S.C. 102(b) as being anticipated by Zakel et al. ("Flip Chip Assembly Using Gold, Gold-Tin, and Nickel-Gold Metallurgy", Flip-Chip Technologies, ed., J. Lau, McGraw-Hill, (195), pp. 415-468).
8. Zakel discloses a layered composite material comprising a layer of a first alloy species of an alloy, having first alloy species properties, and a layer of a second alloy species of the alloy,

having second alloy species properties (e.g. see page 430-431). According to Zakel, the article exhibits an "Au-AuSn-AuSn<sub>2</sub>-AuSn<sub>4</sub>-Sn sandwich structure".

9. Claims 69-73 are rejected under 35 U.S.C. 102(b) as being anticipated by Nee (U.S. Patent 4,869,971).

10. Nee discloses a layered composite material comprising a layer of a first alloy species of an alloy, having first alloy species properties, and a layer of a second alloy species of the alloy, having second alloy species properties (e.g. see Figure 4 and column 3, lines 4-33). According to Nee, multiple layers of alternating of materials may deposited and "the layers within a given group may be distinct from one another in terms of chemical composition, crystal structure, crystal grain size, morphology or other property". Specific examples of Nee include the deposition of alternating layers of beta brass and alpha brass from a single plating solution.


#### *Allowable Subject Matter*

11. Claim 80 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not anticipate or make obvious a composite comprising a plurality of layers of first alloy phase Au<sub>5</sub>Sn and AuSn.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art serves to further establish the level of ordinary skill in the art at the time the invention was made.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (703) 308-2512. The examiner can normally be reached on 8:30am-5:00pm, M-F. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
John J. Zimmerman  
Primary Examiner  
Art Unit 1775

jjz  
May 1, 2003